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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,948	11/19/2001	Antonio Jose Colmenarez	US010577	9179

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER
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TUCKER, WESLEY J

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/988,948	<b>Applicant(s)</b> COLMENAREZ ET AL.	
	<b>Examiner</b> Wes Tucker	<b>Art Unit</b> 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's response to the last Office Action, filed Jan 3, 2005 has been entered and made of record.
2. Applicant has not amended any claims. Applicant has added new claims 17-20. Claims 1-20 are pending.
3. Applicant's arguments, filed Jan 3, 2004, with respect to the rejection(s) of claim(s) 1-16 under 35 U.S.C. 103 have been fully considered and are persuasive. However a new rejection has been made in view of new reference U.S. Patent 5,535,314 to Alves et al.

### ***Specification***

4. Applicant has amended the specification to remove the included hyperlinks. The objections to the specification are therefore withdrawn.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 13, 14, 16, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 5,535,314 to Alves et al.

7. With regard to claim 1, Saneyoshi discloses a system for displaying a driving scene to a driver of an automobile (Fig 1, elements 10, 20, 30, and 9).

Saneyoshi further discloses step a) at least one camera having a field of view and facing in the forward direction of the automobile and capturing images of the driving scene, the images comprised of pixels of the field of view in front of the automobile (Fig.1, element 10).

Saneyoshi discloses step b) a control unit that receives the images from the camera and applies a noise filtering to the pixels comprising the received images, the filtering improving the quality of the image of the driving scene received from the camera when degraded (column 4, lines 59-65). Saneyoshi does not explicitly disclose a salt and pepper filter for use specifically with the image when degraded by a weather condition. Alves discloses an image processor for enhancing images in the environment of detecting images of vehicles. Alves teaches the use of a median filter to be beneficial in reducing false detections during rain and snow (column 14, lines 1-5). Median filters are known to reduce salt and pepper noise and Alves teaches that such filtering is useful in the process of enhancing images including weather such as rain or snow. Therefore it would have been obvious to one of ordinary skill in the art to use a median filter as taught by Alves to enhance images that include weather degradation in

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order to improve the effectiveness of detection of other objects such as vehicles in cooperation with the noise filtering of Saneyoshi in order to better enhance the driving image.

Saneyoshi further discloses c) a display that receives the images from the control unit after application of the filtering operation and displays the images of the driving scene to the driver (Fig.1, element 9).

8. With regard to claim 2, Alves discloses a median filter (column 14, lines 1-5).

9. With regard to claim 13, Saneyoshi discloses wherein the control unit further applies image recognition processing to the image following the filtering (column 8, lines 50-64).

10. With regard to claim 14, the discussion of claim 1 applies. Saneyoshi and Alves disclose a method used in the system disclosed.

11. With regard top claim 16, Saneyoshi discloses wherein the step of noise filtering of the pixels comprising the images is followed by the step of applying image recognition processing to the filtered pixels (column 8, lines 50-56).

12. With regard to claim 18, Alves discloses wherein the weather related condition is precipitation (column 14, lines 1-5).

13. With regard to claim 20, the discussion of claim 18 applies.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 5,535,314 to Alves et al. and further in view of publication "SUSAN-A New Approach to Low Level Image Processing" by Stephen M. Smith et al. hereinafter referred to as Smith.

15. With regard to claim 3, Saneyoshi and Alves disclose a filtering that removes salt and pepper noise, but do not explicitly disclose a SUSAN filter. Smith discloses that the SUSAN filter clearly integrates the best aspects of the best of existing noise reducing filters, including edge-preserving filters (p.68, below equation (36)). These are all desirable characteristics in the combination of Saneyoshi and Alves since Saneyoshi seeks to determine shapes of objects and preserving edges and removing noise is essential to the process. Therefor it would have been obvious to one of ordinary skill in the art at the time of invention to use the SUSAN filter as taught by smith in order to provide the best noise removal and edge preserving filter for use in removing noise while preserving shapes for detection.

16. Claims 4-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 5,535,314 to Alves et al. and further in view of U.S. Patent 6,219,447 to Lee.

17. With regard to claim 4, Saneyoshi and Alves disclose the system of claim 1, but do not disclose wherein the control unit further applies a histogram equalization operation to the intensities of the pixels comprising the filtered images, the histogram equalization operation further improving the quality of the images of the driving scene when degraded by the weather condition. Lee discloses the practice of histogram equalization in order to enhance images (column 2, lines 54-67). Lee teaches that the histogram equalization serves to enhance the appearance of the contrast of the image (column 1, lines 20-24) and that it may be performed in an active section of video image (abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the histogram equalization as taught by Lee to enhance the already filtered video image of Saneyoshi and Alves in order to enhance the contrast appearance of the image.

18. With regard to claim 5, Saneyoshi discloses wherein the control unit applies image recognition processing to the images following the histogram equalization operation (column 8, lines 50-55).

19. With regard to claim 6, Saneyoshi discloses wherein the control unit applies image-recognizing processing to the images to identify objects therein of at least one predetermined type (column 8, lines 50-55).

20. With regard to claim 7, Saneyoshi discloses wherein objects of the at least one predetermined type comprise at least one selected from the group of: pedestrians, other automobiles, traffic signs, traffic controls, and road obstructions (column 8, lines 50-55).

21. With regard to claim 8, Saneyoshi discloses wherein objects of the at least one predetermined type identified in the images are enhanced by the control unit for display by the display (column 4, lines 60-67 and column 5, lines 1-20). Here the image types are considered to be enhanced by the filter and distance histogram for display enhancement.

22. With regard to claim 9, Saneyoshi discloses wherein the control unit further identifies features in the images of at least one predetermined type (column 8, lines 57-65 and column 8, lines 15-19 and Fig. 14). Here Saneyoshi discloses



determining edges or groups of images and their distances. The groups determined and the distances are considered image features.

23. With regard to claim 10, the discussion of claim 9 applies. The features are determined for display.

24. With regard to claim 11, Saneyoshi discloses wherein the features of at least one predetermined type comprise borders of the roadway (Fig. 14)

25. With regard to claim 15, the discussion of claim 4 applies.

26. Claims 12 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,122,597 to Saneyoshi et al. and U.S. Patent 5,535,314 to Alves et al. and further in view of U.S. Patent 5,926,164 to Terakawa et al.

27. With regard to claim 12, Saneyoshi and Alves disclose the system as in claim 1 and Saneyoshi discloses wherein the display is just below the driver's field of view (Fig. 1, element 9). Saneyoshi does not explicitly disclose that the display is a heads-up display. Terakawa discloses a heads up display (Fig. 2a, element 3). Heads up displays are known to be used in close proximity to the driver's or operator's field of

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view so that the driver does not have to look away from his/her path and natural field of view to view the display. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to implement the display of Saneyoshi as a heads-up display as shown in Terakawa so that the driver or operator need not look away from his/her path and natural field of view in order to view the display.

28. With regard to claim 17, Saneyoshi and Alves disclose the system of claim 1, but do not explicitly disclose that the camera used is an infrared camera. Terakawa discloses the use of an infrared camera in a vehicle display device and teaches that infrared rays are visible at longer distances than light rays in the visible spectrum and therefore when images or objects may be difficult to see in the visible spectrum they can be better seen in the infrared spectrum (see abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use infrared imaging as taught by Terakawa in the imagers of Saneyoshi and Alves in order to enable better visibility of objects at greater distances from the vehicle.

29. With regard to claim 19, the discussion of claim 17 applies.

***Contact Information***

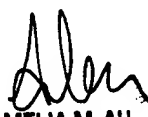
30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

5-23-05

  
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